Instructions

Upgrade of sensor in GD gas detecting sensors: IP 56 / IP 56 Low. temp. with sensor types Electrochemical (EC), Semiconductor (SC) , Catalytic (CT)

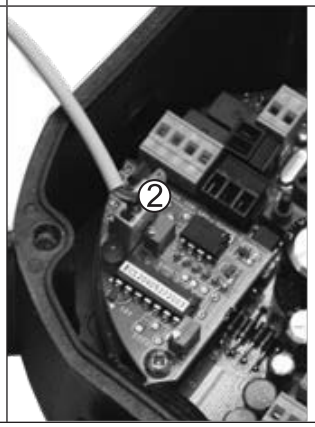
148R9554

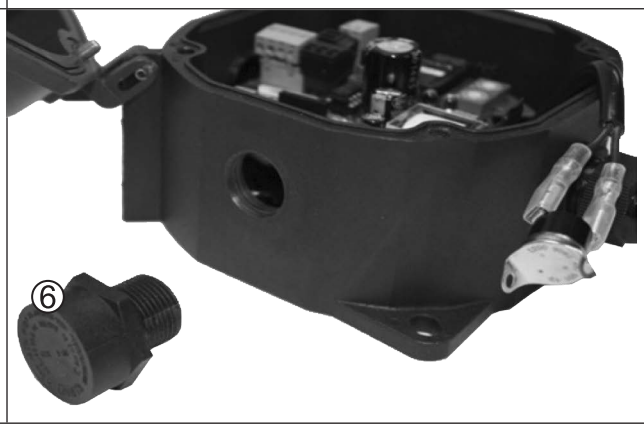
This sensor retrofit procedure replaces the internal sensor with an external sensor on Danfoss GD gas detecting sensors IP 56 enclosure and IP 56 enclosure Low Temperature.

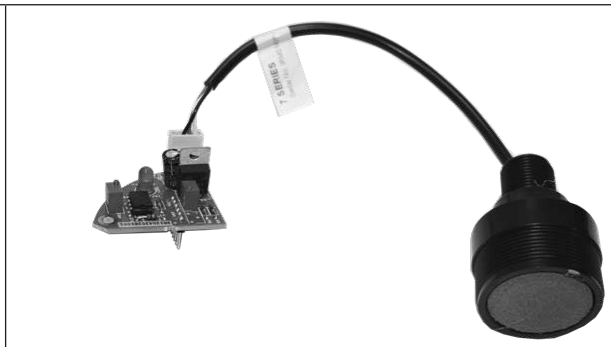
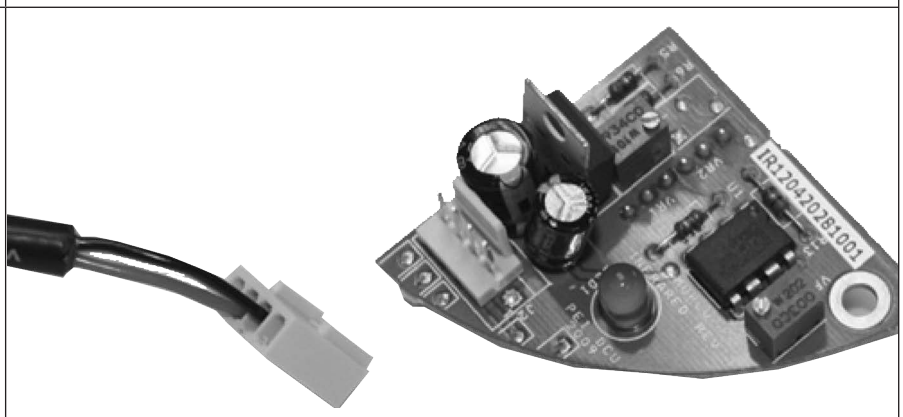
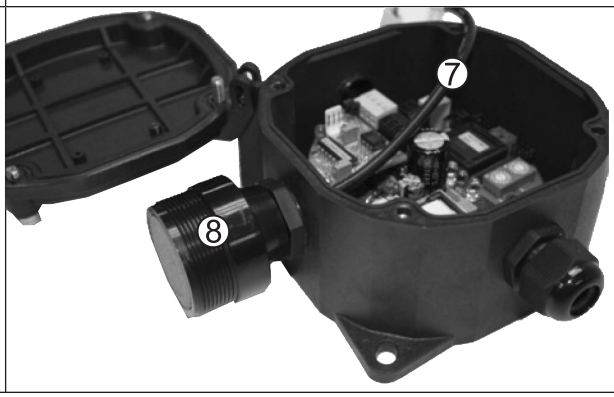
The procedure applies to the following Danfoss code numbers :
148H5009, 148H5019, 148H5029, 148H5039, 148H5049, 148H5119: IP 56

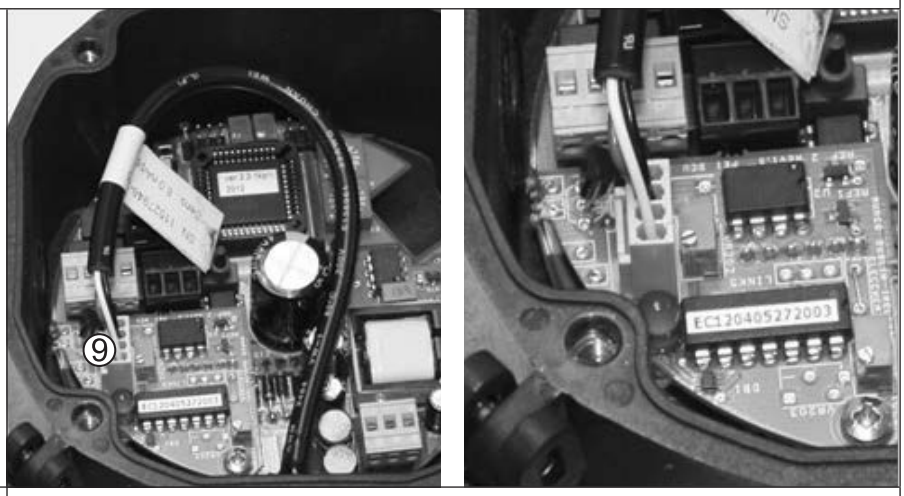
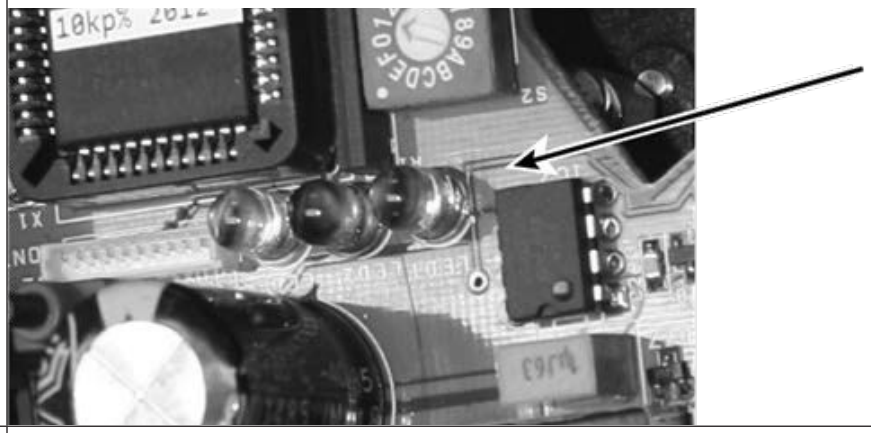
148H5005, 148H5015, 148H5025, 148H5035, 148H5045, 148H5055, 148H5065, 148H5105, 148H5115, 148H5125, 148H5312: IP 56 Low Temperature

148R9554

Step	Description
1.	Note that the sensor upgrade procedure is intended to be performed by a technically qualified person who is also familiar with electronics, ESD effects, and related safety precautions.
2.	When the actual Danfoss GD Gas detecting sensor is located, gather the following components: • Appropriate upgrade kit (GD Tester PCB, new sensor, sensor daughter PCB, and instructions) • Crosshead screwdriver • 4 mm Hex driver
3.	 **IMPORTANT:** The device MUST BE powered off before replacing the sensor. Remove power from the unit by shutting off power at the source.
4.	 **ESD SENSITIVE COMPONENTS:** Follow proper electrostatic discharge (ESD) precautions. Touch a grounded metal object (e.g., conduit) prior to working on the device in order to dissipate any built-up static and to reduce the risk of ESD damage to components.
5.	Locate and remove the 4 enclosure screws using the hex driver. Then carefully open the hinged housing. One of the following sensor types is located in lid ①: Electrochemical (EC) Semiconductor (SC) Catalytic (CT)  
6.	Carefully remove the sensor plug ② from the daughter board connector.  

Step	Description	
7.	Unscrew and remove the sensor board ③ from the lid of the enclosure using a standard Crosshead screwdriver.	
8.	Locate the daughter board ④ Unscrew the crosshead screw ⑤ that secures the daughter board to the mother board (PCB). Then gently pull upwards on the daughter board, slowly rocking it out of its PCB connector. Discard the old daughter board in accordance with approved local practices. Save the crosshead screw for re-installing the sensor PCB.	
9.	Unscrew the breather drain ⑥ from the enclosure.	
10.	**Check of mother board** With the GD tester it is possible to simulate GD Operation within the full ppm range, without any need for refrigerant calibration gas locally. Locate the GD Motherboard Tester, Danfoss code: 148H5239. **Please Note:** The GD Motherboard Tester is **not** included in the Upgrade kit. Locate the Instruction, GD tester for mother PCB, Literature number RI7HB252 for full instruction. **CAUTION** Before reconnecting power to GD, make sure that relevant people, managing the connecting equipment (BMS/PLC systems) to GD has been advised, that the GD now will force Low and High alarms and generate maximum analog output (Analog output 4-20 mA/0-5 V/0-10 V) during this test.	

Step	Description	
11.	Locate the new Sensor Upgrade Kit.	
12.	Temporarily disconnect the daughter board from the sensor.	
13.	Carefully mount the new sensor daughter board to the mother board (PCB). **IMPORTANT:** Alignment of the daughter board and the mother board (PCB) header is critical. It is difficult to see the header where the daughter PCB plugs in. With a perpendicular view above the board, use the standoff hole and metal standoff below to maintain proper alignment. **CAUTION:** Note that it is possible to be off by one pin, and still force the standoff/screw to align, so be careful when mounting the daughter board to the main PCB. **CAUTION:** If the daughter board is installed incorrectly, then on power-up the software sequence of the red and yellow LEDs may not function as expected (or at all). The green LED, however, will likely appear to exhibit proper operation. At Step 17 the check sequence of the LEDs are descriped at power-up Use the previously saved screw to secure the daughter board to the existing metal standoff.	
14.	Locate the new Sensor Upgrade Kit.	
15.	Thread the sensor cable ⑦ through the enclosure and screw the sensor ⑧ into the threaded housing. Hand tighten the sensor enough to just compress the O-ring and create a seal (approximately ¼ turn past hand tight). **IMPORTANT:** Do not use a wrench or any other tool. Do not over-tighten as this will damage the O-ring.	

Step	Description	
16.	Carefully connect the plug ⑨ of the sensor to the mating connector on the daughter board. Route the sensor wiring so that it does not interfere with the reset button and so it does not get pinched when the cover is replaced.	
17.	Restore source power to the sensor. Inspect the LEDs on the board after power up to ensure that: • The Red and Yellow blink twice on power up and then go out, and • The Green LED is on. If this does not happen, then the sensor was not installed properly.	
18.	Secure the lid using the 4 hex nuts.	
19.	The device is calibrated at the factory and does not require calibration on installation. Please consult Danfoss technical documentation for gas detecting sensors, type GDA, GDC, GDHC, GDHF, GDH (DKRCI.PD.S00.A). **IMPORTANT:** Before testing a detector on-site, it must be powered up and allowed to stabilize.	
20.	After restoring power and confirming normal operation, verify that the building management system (BMS) continues to detect and communicate with the sensor (as required). If communication has been lost, re-scan the building sensors via the BMS. No further interaction with the sensor itself should be necessary. If communication continues to be missing, remove power from the sensor and confirm the wiring to the main PCB. Reference the sensor installation instructions provided with the original equipment as needed.	
21.	The disposal of the removed electrical parts should be in accordance with the WEEE directive 2002/96/EC within the European community and/or local regulations for countries outside this area.	